

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manabe (JP 10-278501) in view of Vaxelaire et al. Manabe shows a rim with all of the physical features as set forth in the claims. The thickness of the disk portion is greater than at least thickness T(c).

Manabe does not disclose the relationship (i.e. the specific dimensions) of rim thicknesses of adjacent equal sections. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the rim of Manabe with adjacent equal portions having average thicknesses of 0.5mm or more, generally being between 3-8mm on the disk side and 2-3mm on the flange side, in order to reduce the thickness (and thus weight) of the rim while still retaining suitable strength properties to prevent the rim from failing during use.

One of ordinary skill in the art at the time of the invention would have found it obvious to modify the wheel of Manabe in the manner set forth above, because choosing from a finite number of identified, predictable solutions, would yield a reasonable expectation of success. In this case, Manabe already teaches arranging a wheel rim to have different thicknesses at different locations along the rim. Furthermore, it is well known in the art that reducing the weight of a wheel increases handling

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characteristics, etc. of the wheel. One known method of reducing the weight of a wheel rim is by varying the thickness of the rim, as taught by Manabe.

While Manabe does not specify the exact thicknesses, as set forth in the claims, it would have been obvious to try a variety of combinations of thicknesses until the desired result (i.e. performance, durability, etc. characteristics) was achieved. See *KSR International Co. v. Teleflex Inc.* 550 U.S. ___, 82 USPQ2d 1385 (April 30, 2007).

Manabe does not disclose that the spring constant of the rim body portion is maintained such that the natural frequency of the wheel is greater than the natural frequency of the tire. Vaxelaire et al teaches the concept of changing the rigidity of a wheel by “stiffening” or reinforcing the wheel at various sections in order to prevent the natural frequency of the wheel from matching the natural frequency of a tire mounted thereon. Therefore, from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention that changing the thicknesses of various portions of the rim of Manabe would also function to change the natural frequency of the wheel compared to that of a tire mounted thereon, and that maintaining the natural frequency of the wheel to be greater (or at least different than) that of the tire would reduce sympathetic vibration and road noise.

Response to Arguments

3. Applicant's arguments filed 21 September 2009 have been fully considered but they are not persuasive. Applicant argues that Vaxelaire et al discloses modifying the vibration mode of the disk of a wheel and not the rim portion. However, it should be

noted that Vaxelaire et al was only used as a teaching that changing structure of a wheel to affect the natural frequency of that wheel with respect to the natural frequency of a tire mounted thereon. Manabe shows the actual physical structure of the wheel rim. The references were not literally combined.

The Applicant argues that Manabe shows a rim portion divided into seven sections instead of three equal sections, as set forth in the claims. However, it should be noted that the claims do not preclude the structure set forth by Manabe. Furthermore, the seven equal rim sections of Manabe includes three adjacent, equal sections therein, which meets the limitations of the claim.

The Applicant argues that Manabe is silent on the relative widths of the sections. However, it appears as though the Applicant has not considered the portion of the rejection above (repeated from the previous office action) that deals with this limitation.

Furthermore, the Applicant has not provided any evidence (in the form of declarations or affidavits filed under 37 CFR 1.131 or 1.132) that the claimed invention (1) provides superior or unexpected results or (2) that the combination of Manabe and Vaxelaire et al does not meet the limitations of the claims.

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason R. Bellinger whose telephone number is 571-272-6680. The examiner can normally be reached on Mon - Thurs (9:00-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Morano can be reached on 571-272-6684. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Jason R Bellinger/
Primary Examiner
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